CAIT

Center for Advanced Infrastructure & Transportation
Rutgers, The State University of New Jersey

QUARTERLY PROGRESS REPORT

Project Title:	A Proposal for the Development of High Performances Concrete for Transportation Structures in New Jersey
RFP NUMBER: N/A	NJDOT RESEARCH PROJECT MANAGER: Tony Chmiel
TASK ORDER NUMBER/Study Number: 62 / 4-23806	PRINCIPAL INVESTIGATOR: Hani Nassif
Study Start Date: 04/30/2001 Study End Date: 01/01/2003	Period Covered: 1st Quarter 2002

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Selection of Final Mixes	5%	10%	90%	4.5%
Collection of Data and Preparation of Samples During the Field Samples	20%	5%	55%	11%
Evaluation of Field Samples	10%	10%	30%	3%
Creep and Shrinkage Set-up and Testing	50%	20%	50%	25%
Preparation of Specifications for HPC	10%	5%	5%	0.5%
Final Report	5%	10%	10%	0.5%
TOTAL	100%			44.5%

1. Progress this quarter by task:
   - A. Sensors for the creep specimens are installed and tested.
   - B. The creep chamber is tested for performance in terms of temperature and relative humidity. One of the Humidifier units did not work properly. The Rutgers University maintenance staff is monitoring the chamber for certification of results and to speed up the process of maintaining the creep chamber. Also, the manufacturer has been notified of the problems and their technicians are addressing the changes needed.
   - C. Six more creep rigs (for a total of 14 rigs) are built and ready to start creep testing.
   - D. A draft of the first phase of the HPC study has been submitted to NJDOT during the last Quarterly meeting. Since then many editorial and technical changes has been made and added. However, no comments regarding the Phase I of the project have been received. The team will proceed as agreed during the Quarterly meetings.
   - E. The load cells are also placed in the center of each creep rig bottom plate and wired to the Data Logger outside the chamber.
   - F. PVC conduits are installed in the chamber to run all the cables of different sensors.
   - G. The data logger is installed outside the creep and shrinkage chambers. The sensors are programmed for automatic data collection and storage in the data logger.
   - H. Data collection schemes are designed to ensure redundancy by using three sources of data collection: 1) manual gage reading, 2) vibrating wire strain gages, and 3) foil strain gages.
   - I. Creep specimens are loaded to check the testing setup including data logger and strain gages.
   - J. Two temperatures and humidity transceivers were purchased and installed to verify the chamber's temperature and humidity readings. Currently, the chamber humidity reading is off by 30 %. One of the humidifier of the chamber is also malfunctioning. The creep and shrinkage testing needs a Relative Humidity of 50+-5% and a Temperature of $73+-3^0$F.

2. Proposed activities for next quarter by task
   A. Resolving the chamber humidity problems.
   B. The field casting of specimens has been delayed due to the delay in getting the Creep Chamber in a fully operating mode. It is expected that the Creep Chamber will be reliably operating in Mid March at which time the mixing of specimen will begin.
   C. Clayton Concrete will perform eight different field mixes of 4, 6, 8, and 10 (if achievable in field) ksi, two different mix for each strength. A full truckload of concrete with the specified (or matching) mix proportioning will be delivered to the Rutgers Structural Laboratory. Specimens for seven HPC tests, 1) compressive strength, 2) drying shrinkage, 3) elastic modulus, 4) creep, 5) freezing and thawing, 6) scaling, and 7) RCPT, will be sampled. The same proportions will also be reproduced for strength and RCP test in the Civil Engineering laboratory using Clayton raw material for quality control purposes.
   D. Tests on concrete with different size aggregates are underway.

3. List of deliverables provided in this quarter by task (product date)
   N/A

4. Progress on Implementation and Training Activities
   N/A
5. Problems/Proposed Solutions
   N/A
6. Budget Summary*

Total Project Budget (# of years)	1.5 Years	$70,533.00
Total Project Expenditure to date		$197,643
% of Total Project Budget Expended		51.4%
Task Order Number/Study Number:		62 / 4-23806
Current Task Order Budget (# of years)	Year 1.5	$384,320.00
Actual Expenditure to date against current task order		$197,643
% of current task order budget expended		51.4%

* These are approximate expended amounts for the project; these estimates are for reference only and should not be used for official accounting purposes. For a more accurate project accounting please review the quarterly invoice for this project.